

# The American Mineralogist

---

*Journal of the Mineralogical  
Society of America*

---

EDITOR

WALTER F. HUNT

ASSOCIATE EDITORS

MICHAEL FLEISCHER, ESPER S. LARSEN, AUSTIN F. ROGERS,  
M. N. SHORT AND GEORGE TUNELL

---

VOLUME 36, 1951

Published bi-monthly by the Society

U. OF I.  
LIBRARY

Composed, Printed and Bound by  
**The Collegiate Press**  
George Banta Publishing Company  
Menasha, Wisconsin

# CONTENTS OF VOLUME 36

## NOS. 1 AND 2, JANUARY-FEBRUARY

|  |     |
|--|-----|
| The uranium minerals from the Hillside Mines, Yavapai County, Arizona . . . . .                    | 1   |
| ..... Joseph M. Axelrod, Frank S. Grimaldi, Charles Milton, and K. J. Murata                       |     |
| Differential thermal analysis of natural hydrous ferric oxides . . . . .                           | 23  |
| ..... J. Laurence Kulp and Albert F. Trites  |     |
| The Nortonite fall and its mineralogy . . . . .  | 45  |
| ..... Carl W. Beck and Lincoln LaPaz   |     |
| Huttonite, a new monoclinic thorium silicate . . . . .   | 60  |
| ..... A. Pabst   |     |
| With an account of its occurrence, analysis, and properties . . . . .                              |     |
| ..... C. Osborne Hutton  | 66  |
| Petrology of the red radioactive zones north of Goldfields, Saskatchewan . . . . .                 | 70  |
| ..... Charles E. B. Conybeare and Charles D. Campbell  |     |
| Furnace atmosphere control in differential thermal analysis . . . . .                              | 80  |
| ..... Richards A. Rowland and Donald R. Lewis  |     |
| A useful method for determining approximate composition of fine grained igneous rocks . . . . .    | 92  |
| ..... W. H. Mathews  |     |
| Precision lattice measurements of galena . . . . .   | 102 |
| ..... B. Wasserstein   |     |
| Sphalerite-dolomite orientation relations at the Renfrew zinc prospect, Ontario . . . . .          | 116 |
| ..... Forbes Robertson   |     |
| Setting a given direction parallel to the axis of a goniometer head . . . . .                      | 123 |
| ..... D. Jerome Fisher   |     |
| Thorite from California . . . . .  | 129 |
| ..... D. R. George   |     |
| The role of yttrium and other minor elements in the garnet group . . . . .                         | 133 |
| ..... Howard W. Jaffe  |     |
| Notes and News: Minerals of the eastern Santa Monica Mountains, Los Angeles City . . . . .         | 156 |
| ..... George J. Neuerburg  |     |
| A note on the fluorescence of Wyoming bentonite . . . . .  | 160 |
| ..... H. R. Samson   |     |
| A graphical simplification of the relationship between 2 V and $N_x$ , $N_y$ , and $N_z$ . . . . . | 162 |
| ..... C. P. Gravenor   |     |
| An improved "diamond" mortar . . . . .   | 164 |
| ..... William C. Oke   |     |
| A new locality for greenockite crystals in Bolivia . . . . .                                       | 165 |
| ..... Frederico Ahlfeld  |     |
| Book reviews . . . . .   | 167 |

## NOS. 3 AND 4, MARCH-APRIL

|  |     |
|--|-----|
| Mineral formation in natural chemical systems under equilibrium and non-equilibrium conditions . . . . . | 171 |
| ..... George Tunell  |     |
| High temperature thermal effects of clay and related materials . . . . .                                 | 182 |
| ..... W. F. Bradley and R. E. Grim   |     |
| Fractography as a mineralogical technique . . . . .  | 202 |
| ..... Carl A. Zapffe, Cleo O. Worden, and Carl Zapffe  |     |
| Allanite from Yosemite National Park, Tuolumne, Co., California . . . . .                                | 233 |
| ..... C. Osborne Hutton  |     |
| Studies of uranium minerals VII: Zeunerite . . . . .   | 249 |
| ..... Judith Weiss Frondel   |     |
| Mineralogy of triplite . . . . .   | 256 |
| ..... E. Wm. Heinrich  |     |
| Preliminary observations on the luminescence activation of zeolite minerals by base exchange . . . . .   | 272 |
| ..... Esther W. Claffy and James H. Schulman   |     |
| Low temperature liquid immiscibility in the system $K_2O$ -FeO- $Al_2O_3$ - $SiO_2$ . . . . .            | 282 |
| ..... Edwin Roedder  |     |

|   |                                  |     |
|---|----------------------------------|-----|
| Alignment chart for the calculation of refractive index from the deviation of light by a prism.....             | Horace Winchell                  | 287 |
| Presentation of the Roebling Medal of the Mineralogical Society of America to Norman L. Bowen.....              | Arthur F. Buddington             | 291 |
| Acceptance of the Roebling Medal of the Mineralogical Society of America.....                                   | Norman L. Bowen                  | 295 |
| Memorial of Clarence Norman Fenner.....   | Fred E. Wright                   | 297 |
| Proceedings of the thirty-first annual meeting of the Mineralogical Society of America at Washington, D. C..... | C. S. Hurlbut, Jr.               | 304 |
| Correspondents, fellows, and members of the Mineralogical Society of America....                                |                                  | 331 |
| Mineralogical Society (London).....   |                                  | 357 |
| Notes and News: Notes on California Minerals: nuevite=samarskite; trona and hanksite; gaylussite.....           | Joseph Murdoch                   | 358 |
| On the mineralogy of Antarctica.....  | Duncan Stewart, Jr.              | 362 |
| Discussion of "x-ray diffraction patterns of asbestos".....   | J. E. Comeforo and Wilhelm Eitel | 368 |
| Book reviews.....   |                                  | 374 |
| New mineral names.....  |                                  | 381 |

## NOS. 5 AND 6, MAY-JUNE

### CONTRIBUTIONS TO CANADIAN MINERALOGY

#### *Volume 5, Part 3*

*Sponsored by The Walker Mineralogical Club*

*Edited by L. G. Berry, Kingston*

|  |  |     |
|--|--|-----|
| Memorial of Martin Alfred Peacock.....   | Charles Palache  | 385 |
| Studies of radioactive compounds: I—Vandenbrandeite.....   | I. H. Milne and E. W. Nuffield                               | 394 |
| Studies of radioactive compounds: II—Meta-zeunerite, uranophane, kasolite and cuprosklodowskite in Canada..... | D. D. Hogarth  | 411 |
| Studies of radioactive compounds: III—Urano-uranic oxide ( $U_3O_8$ ).....                                     | I. H. Milne  | 415 |
| The effect of uralitization upon the chemical composition of the Sudbury norite....                            | Thomas A. Oliver   | 421 |
| Further notes on the precision of the Buerger precession instrument.....                                       | W. H. Barnes, Maria Przybylska and Violet C. Shore           | 430 |
| Matildite, aramayoite, miargyrite.....   | A. R. Graham   | 436 |
| Xanthophyllite.....  | S. A. Forman   | 450 |
| Empressite and "stuetzite".....  | R. M. Thompson, M. A. Peacock, J. F. Rowland and L. G. Berry | 458 |
| The structural lattice of hessite.....   | J. F. Rowland and L. G. Berry                                | 471 |
| An x-ray study of the mineral livingstonite.....   | D. H. Gorman   | 480 |
| Observations on conichalcite, cornwallite, euchroite, lironite and olivenite.....                              | L. G. Berry  | 484 |
| Notes and News   |  |     |
| Mineral occurrences in Western Canada.....   | R. M. Thompson   | 504 |
| The childrenite-eosphorite problem.....  | W. H. Barnes and Violet C. Shore                             | 509 |
| The unit cell of linarite.....   | L. G. Berry  | 511 |
| The unit cell of magnetoplumbite.....  | L. G. Berry  | 512 |
| The Walker Mineralogical Club.....   |  | 515 |
| Book Reviews.....  |  | 516 |



## NOS. 7 AND 8, JULY-AUGUST

|  |                                       |     |
|--|---------------------------------------|-----|
| Complete substitution of aluminum for silicon: The system $3\text{MnO} \cdot \text{Al}_2\text{O}_3 \cdot 3\text{SiO}_2 \cdot 3\text{Y}_2\text{O}_3 \cdot 5\text{Al}_2\text{O}_3$ ..... | H. S. Yoder and M. L. Keith           | 519 |
| Nasonite and its relation to pyromorphite.....   | Clifford Frondel and L. H. Bauer      | 534 |
| Isomorphism and bond type.....   | W. S. Fyfe                            | 538 |
| Computation of the optical angle from the three principal refractive indices.....  | Fred E. Wright                        | 543 |
| X-ray examination of uranothorite.....   | A. Pabst                              | 557 |
| Differential thermal analyses of davidite.....   | Paul F. Kerr and H. D. Holland        | 563 |
| Perovskite.....  | Joseph Murdoch                        | 573 |
| Observations on twinning of plagioclase in metamorphic rocks.....  | Francis J. Turner                     | 581 |
| Taylorite, mascagnite, apthitalite, lecontite, and oxammite from guano.....  | Horace Winchell and Richard J. Benoit | 590 |
| A restudy of the Social Circle, Georgia, meteorite.....  | E. P. Henderson and Stuart H. Perry   | 603 |
| Ilsemannite and jordisite.....   | Lloyd W. Staples                      | 609 |
| The differential thermal analyzer as a micro-calorimeter.....  | Mark Wittels                          | 615 |
| Notes and News: Determination of thin-section thickness by the U-stage.....  | J. L. Anderson                        | 622 |
| Notes on the nomenclature of textural terms in petrography.....  | L. Dolar-Mantuani                     | 624 |
| Microseparation of minerals in heavy liquids.....  | J. L. Rodda                           | 625 |
| Direct determination of interplanar spacing from x-ray patterns on recorded charts.....  | Robert F. Shurtz                      | 626 |
| Vivianite concretions in Aquia Formation (Middle Eocene), Anne Arundel County, Maryland.....   | Arthur R. Barwick                     | 629 |
| The greenockite locality at Bishopston, Scotland.....  | H. F. Harwood                         | 630 |
| Ten years of new mineral names.....  | Michael Fleischer                     | 630 |
| Book reviews.....  |                                       | 633 |
| Mineralogical Society (London).....  |                                       | 635 |
| New mineral names.....   |                                       | 638 |

## NOS. 9 AND 10, SEPTEMBER-OCTOBER

|   |   |     |
|---|---|-----|
| Thermal study of the Ca-Mg-Fe carbonate minerals.....   | J. Laurence Kulp, Purfield Kent, and Paul F. Kerr | 643 |
| Studies of uranium minerals (VIII): Sabugalite, an aluminum-autunite.....   | Clifford Frondel                                  | 671 |
| Studies of uranium minerals (IX): Saléeite and novacekite.....  | Clifford Frondel                                  | 680 |
| Crystal structure determination from rough intensity relations.....   | Joseph S. Lukesh                                  | 687 |
| Stylotypite, a discredited species.....   | Charles Milton and Joseph M. Axelrod              | 696 |
| A test of the precision of thin-section analysis by point counter.....  | F. Chayes and H. W. Fairbairn                     | 704 |
| Igneous rocks of the Capitan Quadrangle, New Mexico.....  | Leroy T. Patton                                   | 713 |
| The importance of the exchangeable magnesium and cation-exchange capacity in the study of montmorillonitic clays..... | Margaret D. Foster                                | 717 |
| A method for the separation of polished thin sections of mineral grains.....  | R. J. Brison                                      | 731 |
| Ferrocapholite, the hitherto unknown ferrous iron analogue of carpholite proper.....                                  | W. P. de Roever                                   | 736 |

|  |  |     |
|--|--|-----|
| Immersion liquids of high refractive index . . . . .                             | Robert Meyrowitz and Esper S. Larsen, Jr.      | 746 |
| Beryl at Mount Mica, Maine . . . . .   | Cornelius S. Hurlbut, Jr., and Henry E. Wenden | 751 |
| Some aspects of mineral calorimetry . . . . .                                    | Mark Wittels                                   | 760 |
| Notes and News: A high temperature stage for the polarizing microscope . . . . . | Elizabeth A. Wood                              | 768 |
| The development of twinning in dehydration of brucite . . . . .                  | Julio Garrido                                  | 773 |
| Note on the occurrence of corundum in Idaho . . . . .                            | Verne C. Fryklund, Jr.                         | 776 |
| Double fluorides of zinc . . . . .   | Earl Ingerson and George W. Morey              | 778 |
| Detection of fluorite in sands with zirconium-alizarin solution . . . . .        | Robert M. Grogan                               | 780 |
| Mineralogical Society (London) . . . . .   |  | 783 |
| Book Reviews . . . . .   |  | 785 |
| New Mineral names . . . . .  |  | 793 |

#### NOS. 11 AND 12, NOVEMBER-DECEMBER

|   |   |     |
|---|---|-----|
| Thermal analysis and x-ray studies of saucornite and some zinc minerals of the same paragenetic association . . . . . | George T. Faust                                     | 795 |
| Notes on precision and accuracy of optic angle determination with the universal stage . . . . .                       | H. W. Fairbairn and T. Podolsky                     | 823 |
| The crystal structure of claudetite (monoclinic $\text{As}_2\text{O}_8$ ) . . . . .                                   | Alfred J. Frueh, Jr.                                | 833 |
| Structural transformations in amphiboles at elevated temperatures . . . . .   | Mark Wittels  | 851 |
| Chloritoid from Rawlinsville, Lancaster County, Pennsylvania . . . . .  | Anna Hietanen                                       | 859 |
| The geology and paragenesis of the Lord Hill pegmatite . . . . .  | H. H. Woodard                                       | 869 |
| Petrological studies on plagioclase twins . . . . .   | Masao Gorai   | 884 |
| Notes and News: Jarosite from the California Tertiary . . . . .   | Louis I. Briggs                                     | 902 |
| Fluid inclusions in beryl and quartz from pegmatites of the Middletown District, Connecticut . . . . .                | Eugene N. Cameron, Robert B. Rowe, and Paul L. Weis | 906 |
| Apparatus for the separation of mineral grains . . . . .  | F. E. Senftle                                       | 910 |
| Unit cell of schairerite . . . . .  | C. W. Wolfe and Alice Caras                         | 912 |
| A new dumortierite locality from Montana . . . . .  | Charles Graham and Forbes Robertson                 | 916 |
| Unit cell and space group of glaucophanite . . . . .  | J. H. O'Mara  | 918 |
| Some measurements on minerals of the pyrite group . . . . .   | Robert B. Gordon                                    | 918 |
| Book reviews . . . . .  |   | 921 |
| New mineral names; Discredited minerals . . . . .   |   | 925 |
| Index to volume 36; Title page; Table of contents . . . . .   |   | 929 |

# INDEX TO VOLUME 36

Leading articles are in **bold face** type; notes, abstracts, and reviews are in ordinary type. Only minerals for which definite data are given are indexed.

|  |     |   |          |
|--|-----|---|----------|
| Agricola, Georgius. De Re Metallica. (Book review).....  | 516 | Bannister, F. A.....  | 382, 642 |
| Ahfeld, F. New locality for greenockite crystals in Bolivia.....   | 165 | Barksdale, J. D.....  | 310      |
| Alkaline rocks of the Nemuro District, Hokkaido, Japan, petrology of. (Yagi).....  | 327 | <b>Barnes, W. H.</b> and Shore, V. C. The childrenite-eosphorite problem.....   | 509      |
| <b>Allanite from Yosemite National Park, Tuolumne Co., Calif. (Hutton).....</b>  | 233 | ——, <b>Przybylska, Maria</b> and <b>Shore, V. C.</b> Further notes on the precision of the Buerger precession instrument.....       | 430      |
| Allen, V. T.....   | 310 | Barwick, A. R. Vivianite concretions in Aquia Formation (Middle Eocene), Anne Arundel County, Maryland.....                         | 629      |
| Alumian (=alunite). (Bassett, Goodwin).....  | 383 | Basaluminite, hydrobasaluminite. (Hollingworth, Bannister)....  | 382      |
| <b>Amphiboles, structural transformations at elevated temperatures. (Wittels).....</b>   | 851 | Bassett, H.....   | 383      |
| Anderson, J. L. Determination of thin-section thickness by the U-stage.....  | 622 | Bateman, A. M. Economic Mineral Deposits. (Book review).....  | 167      |
| Andersonite, optical, chemical and x-ray data.....   | 4   | Bates, T. F.....  | 310      |
| Anion exchange in clay minerals. (Prabhu).....   | 324 | <b>Bauer, L. H.</b> with <b>Fron del, C.</b> Nasonite and its relation to pyromorphite.....   | 534      |
| Annals of the University of Stellenbosch. (Book review).....   | 791 | Bayldonite, stolzite, hydrocerussite and other rare minerals, occurrence in the Lake District. (Kingsbury, Hartley)....             | 637      |
| Anosov, F. Y.....  | 793 | Bayleyite, optical, chemical and x-ray data.....  | 4        |
| Antarctica, mineralogy of. (Stewart)   | 362 | Beard, E. H.....  | 641      |
| Antimony oxides, naturally occurring, further account of. (Mason, Vitaliano).....  | 320 | <b>Beck, C. W.</b> and <b>LaPaz, L.</b> The Nortonite fall and its mineralogy.....  | 45       |
| Antofagastite = eriochalcite. (Fron del).....  | 384 | ——.....   | 357      |
| <b>Aphthitalite. (Winchell, Benoit)...</b>   | 590 | <b>Benoit, R. J.</b> with <b>Winchell, H.</b> Taylorite, mascagnite, aphthitalite, lecontite, and oxamite from guano.....           | 590      |
| <b>Aramayoite. (Graham).....</b>   | 436 | Bentonite, Wyoming, fluorescence of. (Sampson).....   | 160      |
| Armstrong, G.....  | 636 | Berg, G., <b>Friedensburg, F.</b> , and <b>Sommerlatte, H.</b> Die Metallischen Rohstoffe, Vol. 9, Blei und Zink. (Book review).... | 633      |
| <b>Axelrod, J. M., with Milton, C.</b> Stylotypite, a discredited species.....   | 696 | <b>Berry, L. G., Peacock, M. A.</b> Rowland, J. F., with <b>Thompson, R. M.</b> Empressite and "stuet-                              |          |
| ——, <b>Grimaldi, F. S., Milton, C.,</b> and <b>Murata, K. J.</b> Uranium minerals from Hillside Mine, Yavapai County, Arizona..... | 1   |   |          |
| ——.....  | 631 |   |          |
| Ball, Sydney H. A Roman Book on Precious Stones. (Book review)   | 168 |   |          |



- zite."..... 458
- . Observations on conichalcite, cornwallite, euchroite, liroconite and olivenite..... 484
- . and Rowland, J. F., The structural lattice of hessite... 471
- . Unit cell of linarite..... 511
- . Unit cell of magnetoplumbite..... 512
- Beryl at Mount Mica, Maine.** (Hurlbut, Wenden)..... 751
- Beus, A. A..... 925, 926
- Bonatti, S..... 926
- Botallackite. (Fron del)..... 384
- Bowen, N. L. Acceptance of the Roebling Medal of the Mineralogical Society of America.** 295
- . (Book review)..... 785
- Bradley, W. F. and Grim, R. E. High temperature thermal effects of clay and related materials.**..... 182
- Branford-Killingworth area, Connecticut, geology of. (Mikami, Digman)..... 321
- Brazilianite, second South American occurrence. (Murdoch)... 323
- Breece, New Mexico, meteoritic iron. (Beck, LaPaz, Goldsmith)..... 357
- Briggs, L. I. Jarosite from the California Tertiary..... 902
- Brindley, G. W. X-ray Identification and Crystal Structure of Clay Minerals. (Book review)..... 632, 637, 921
- Brison, R. J. A method for the preparation of polished thin sections of mineral grains.**.... 731
- Brunckite. (Zemann)..... 383
- Buckley, H. E. Crystal Growth. (Book review)..... 787
- Buddhue, J. D. Meteoritic Dust. (Book review)..... 633
- Buddington, A. F. Presentation of the Roebling Medal of the Mineralogical Society of America to Norman L. Bowen.** 291
- Buerger, M. J..... 311
- Buerger precession instrument, further notes on the precision of.** (Barnes, Przybylska, Shore)..... 430
- Burri, C. Das Polarisationsmikroskop. (Book review)..... 374
- Bystromite, magnesium antimonate, a new mineral. (Mason, Vitaliano)..... 320
- Ca-Mg-Fe carbonate minerals, thermal study of** (Kulp, Kent, Kerr)..... 643
- Calculi and other stones found in mammals. (Milton, Axelrod)... 631
- California minerals, notes on: nuevite = samarskite; trona and hanksite; gaylussite. (Murdoch)..... 358
- Cameron, E. N., Rowe, R. B. and Weis, P. L. Fluid inclusions in beryl and quartz from pegmatites of the Middletown District, Connecticut..... 906
- Campbell, C. D., with Conybeare, C. E. B. Petrology of the red radioactive zones north of Goldfields, Saskatchewan.**.... 70
- Capitan Quadrangle, New Mexico, igneous rocks of.** (Patton).... 713
- Caras, A. with Wolfe, C. W. Unit cell of schairerite..... 912
- Carbonate minerals, thermal study of.** (Kulp, Kent, Kerr)..... 643
- Carnotite, tyuyamunite and related compounds, hydration and base exchange properties of. (Murata, Cisney, Stieff, Zworykin)..... 323
- Chalcantite by the x-ray precession technique. (Fisher)..... 314
- Chayes, F. and Fairbairn, H. W. A test of the precision of thin-section analysis by point counter.**..... 704
- Childrenite-eosphorite problem. (Barnes, Shore)..... 509
- Chloritoid from Rawlinsville, Lancaster County, Pennsylvania.** (Hietanen)..... 859
- Chukhrov, F. V..... 793



- Cisney, E. A.....323, 326  
 Clabaugh, S. E..... 311  
**Claffy, E. W. and Schulman, J. H.**  
 Preliminary observations on  
 the luminescence activation of  
 zeolite minerals by base ex-  
 change.....272, 312  
 Claringbull, G. F.....357, 642  
**Claudetite (monoclinic  $\text{As}_2\text{O}_3$ ),**  
**crystal structure of (Frueh)** 316, 833  
 Clay minerals, nomenclature of... 370  
 Cobalt caberite. (Meixner)..... 926  
 Colloidal Chemistry of the Silicate  
 Minerals (Marshall). (Book  
 review)..... 921  
 Comeforo, J. E. and Eitel, W. Dis-  
 cussion of "X-ray diffraction  
 patterns of asbestos."..... 368  
 ..... 312  
**Complete substitution of alumi-**  
**num for silicon: The system**  
 **$3\text{MnO} \cdot \text{Al}_2\text{O}_3 \cdot 3\text{SiO}_2 - 3\text{Y}_2\text{O}_3 \cdot$**   
 **$5\text{Al}_2\text{O}_3$ . (Yoder, Keith)....** 328, 519  
**Composition of fine grained igneous**  
**rocks, useful method for de-**  
**termining. (Mathews).....** 92  
**Conichalcite, cornwallite, euch-**  
**roite, lironite and olivenite,**  
**observations on. (Berry).....** 484  
 Conservation of Natural Re-  
 sources. (Smith), (Book re-  
 view)..... 377  
**Conybeare, C. E. B. and Camp-**  
**bell, C. D. Petrology of the red**  
**radioactive zones north of**  
**Goldfields, Saskatchewan....** 70  
**Cornwallite. (Berry).....** 484  
 Correns, C. W. Einführung in die  
 Mineralogie (Kristallographie  
 und Petrologie). (Book re-  
 view)..... 789  
 Corundum in Idaho, note on the  
 occurrence of. (Fryklund).... 776  
 Corundum deposits of Montana.  
 (Clabaugh)..... 311  
 Crystal Growth. (Buckley), (Book  
 review)..... 787  
**Crystal structure determination**  
**from rough intensity relations.**  
**(Lukesh).....** 687  
 Cuomo, J. R..... 638  
 Cupromontmorillonite. (Chuk-  
 hrov, Anosov)..... 793  
**Cuprosklodowskite. (Hogarth)....** 411  
 Das Polarisationsmikroskop. (Bur-  
 ri). (Book review)..... 374  
**Davidite, differential thermal anal-**  
**yses of (Kerr, Holland).....** 563  
 Davidson, W. F..... 357  
 De Re Metallica. (Georgius Ari-  
 cola), (Book review)..... 516  
 Dennen, W. H..... 313  
**deRoever, W. P. Ferrocapholite,**  
**the hitherto unknown ferrous**  
**iron analogue of carpholite**  
**proper.....** 736  
 "Diamond" mortar, improved.  
 (Oke)..... 164  
 Diccionario Minero-Metalúrgico-  
 Geológico-Mineralógico-Petro-  
 gráfico, y de Petróleo (Inglés-  
 Español, Francés, Alemán,  
 Ruso). (Novitzky), (Book re-  
 view)..... 791  
 Die Metallischen Rohstoffe, Vol. 9,  
 Blei und Zink. (Berg, Friedens-  
 burg, Sommerlatte), (Book re-  
 view)..... 633  
**Differential thermal analysis of**  
**natural hydrous ferric oxides**  
**(Kulp, Trites).....** 23  
**Differential thermal analyzer as a**  
**micro-calorimeter. (Wittels).....** 615  
 Digman, R..... 321  
 Direct determination of interplanar  
 spacings from x-ray patterns  
 recorded on charts. (Shurtz)..< 626  
 Discredited minerals. ....383, 642, 927  
 Dollar-Mantuani, L. Notes on the  
 nomenclature of textural terms  
 in petrography..... 624  
 Donnay, J. D. H. (Book review)... 167  
 Double fluorides of zinc. (Ingerson,  
 Morey)..... 778  
 Duftite, new occurrences of. (Clar-  
 ingbull)..... 357  
 Dumortierite locality from Mon-  
 tana, new. (Graham, Robert-  
 son)..... 916

- Dunham, K. C. . . . . 636
- Economic Mineral Deposits (Bate-  
man), (Book review) . . . . . 167
- Einführung in die Gesteinskunde.  
(Leitmeier), (Book review) . . . . . 922
- Einführung in die Mineralogie  
(Kristallographie und Petrol-  
ogie. (Correns), (Book review) . . . . . 789
- Eitel, W. and Comeforo, J. E. Dis-  
cussion of "X-ray diffraction  
patterns of asbestos." . . . . 368
- . Silicate Melt Equilibria.  
(Book review) . . . . . 785
- . . . . . 312, 317
- Empressite and "stuetzite."**  
(Thompson, Peacock, Row-  
land, Berry) . . . . . 458
- Engel, A. E. J. . . . . 313
- Engel, Celeste . . . . . 313
- Eosphorite-childrenite problem.  
(Barnes, Shore) . . . . . 509
- Erinite (Berry) . . . . . 487
- Eschwegeite (= tantalian poly-  
crase). (Tavora) . . . . . 927
- Eskdal No. 2 boring, East York-  
shire, petrology of evaporites.  
(Stewart) . . . . . 636
- Euchroite. (Berry)** . . . . . 484
- Evaporites of Eskdale No. 2 Bor-  
ing, East Yorkshire, petrology  
of (Stewart) . . . . . 636
- Exchangeable magnesium and ca-  
tion-exchange capacity in the  
study of montmorillonitic  
clays, importance of. (Foster)**  
. . . . . 315, 717
- Fairbairn, H. W. and Podolsky, T.  
Notes on precision and ac-  
curacy of optic angle deter-  
mination with the universal  
stage . . . . . 823
- , with Chayes, F. A test of  
the precision of thin-section  
analysis by point counter . . . . . 704
- Faust, G. T. Thermal analysis and  
x-ray studies of saucnite and  
some zinc minerals of the  
same paragenetic association. . . . . 795
- . (Book review) . . . . . 789
- Fenner, Clarence Norman, memo-  
rial of. (Wright) . . . . . 297
- Ferrocarpholite, the hitherto un-  
known ferrous iron analogue of  
carpholite proper. (DeRoever)** . . . . . 736
- Fisher, D. J. Setting a given direc-  
tion parallel to the axis of a  
goniometer head . . . . . 123
- . . . . . 314
- Flawn, P. T. . . . . 314
- Fleischer, M. Ten years of new  
mineral names . . . . . 630
- Flint, raw and calcined, properties  
of. (Weymouth, Williamson) . . . . . 637
- Fluid inclusions in beryl and  
quartz from pegmatites of the  
Middletown District, Connec-  
ticut. (Cameron, Rowe, Weis) . . . . . 906
- Fluorine-amphiboles, synthetic,  
isomorphism of. (Comeforo,  
Hatch, Eitel) . . . . . 312
- Fluorine-micas and related layer  
structure compounds, synthe-  
sis of. (Hatch, Eitel, Humphrey) . . . . . 317
- Fluorite in sands, detection of,  
with zirconium-alizarin solu-  
tion. (Grogan) . . . . . 780
- Folk, R. L. . . . . 315
- Forman, S. A. Xanthophyllite** . . . . . 450
- Formation temperatures of south-  
ern Illinois bedded fluorite as  
determined from fluid inclu-  
sions. (Grogan, Shrode) . . . . . 316
- Foster, M. D. The importance of  
the exchangeable magnesium  
and cation-exchange capacity  
in the study of montmoril-  
lonitic clays** . . . . . 315, 717
- Foster, W. R. . . . . 315
- Fractography as a mineralogical  
technique. (Zapffe, Worden,  
Zapffe)** . . . . . 202
- Friedensburg, F., Sommerlatte,  
H., Berg, G. Die Metallischen  
Rohstoffe, Vol. 9, Blei und  
Zink. (Book review) . . . . . 633
- Fron del, C. Uranium minerals  
(VIII): Sabugalite, an alumi-  
num-autunite** . . . . . 671
- . Uranium minerals (IX):

- Saléeite and novacekite. . . . . 680  
 ———. and Bauer, L. H. Nasonite  
 and its relation to pyromor-  
 phite. . . . . 534  
 ———. . . . . 316, 384  
 Frondel, J. W. Studies of uranium  
 minerals (VII); Zeunerite. . . . . 249  
 Frueh, A. J., Jr. The crystal struc-  
 ture of claudetite (mono-  
 clinic  $\text{As}_2\text{O}_3$ ). . . . . 316, 833  
 Fryklund, V. C., Jr. Note on the  
 occurrence of corundum in  
 Idaho. . . . . 776  
 Furnace atmosphere control in  
 differential thermal analysis  
 (Rowland, Lewis). . . . . 80, 324  
 Fyfe, W. S. Isomorphism and bond  
 type. . . . . 538  
 Gagarin, G. . . . . 638  
 Galena, precision lattice measure-  
 ments of. (Wasserstein). . . . . 102  
 Garrido, J. The development of  
 twinning in dehydration of  
 brucite. . . . . 773  
 Gaylussite. (Murdoch). . . . . 358  
 Geochemistry. (Rankama, Saha-  
 ma), (Book review). . . . . 378  
 George, D. R. Thorite from Cali-  
 fornia. . . . . 129  
 Ginzburg, A. I. . . . . 382, 642  
 Glaucochroite, unit cell and space  
 group of. (O'Mara). . . . . 918  
 Goldsmith, L. H. . . . . 357  
 Goodwin, T. H. . . . . 383  
 Gorai, M. Petrological studies on  
 plagioclase twins. . . . . 884  
 Gordon, R. B. Some measurements  
 on minerals of the pyrite group. . . . . 918  
 Gorman, D. H. X-ray study of the  
 mineral livingstonite. . . . . 480  
 Gottardi, G. . . . . 926  
 Graham, A. R. Matildite, aramayo-  
 ite, miargyrite. . . . . 436  
 Graham, C. and Robertson, F. A  
 new dumortierite locality from  
 Montana. . . . . 916  
 Granophyre in diabase in south-  
 eastern Pennsylvania, origin of.  
 (Hotz). . . . . 317  
 Graphical simplification of the re-  
 lationship between  $2V$  and  
 $N_x$ ,  $N_y$  and  $N_z$ . (Gravenor). . . . . 162  
 Gravenor, C. P. A graphical sim-  
 plification of the relationship  
 between  $2V$  and  $N_x$ ,  $N_y$  and  $N_z$ . . . . . 162  
 Greenockite crystals in Bolivia,  
 new locality for. (Ahlfeld). . . . . 165  
 Greenockite locality at Bishopton,  
 Scotland. (Harwood). . . . . 630  
 Grenville Series in the northwest  
 Adirondacks: Stratigraphy  
 and metamorphic reconstruc-  
 tion. (Engel, Engel). . . . . 313  
 Grim, R. E., with Bradley, W. F.  
 High temperature thermal ef-  
 fects of clay and related mate-  
 rials. . . . . 182  
 Grimaldi, F. S., Milton, C., and  
 Murata, K. J., with Axelrod,  
 J. M. Uranium minerals from  
 the Hillside Mine, Yavapai  
 County, Arizona. . . . . 1  
 Grogan, R. M. Detection of fluo-  
 rite in sands with zirconium-  
 alizarin solution. . . . . 780  
 ———. . . . . 316  
 Growth of water soluble and other  
 crystals at low temperatures.  
 (Waesche). . . . . 326  
 Gruner, J. W. (Book review). . . . . 924  
 Habit changes in barytes from  
 Westmorland and Durham.  
 (Davidson, Seager). . . . . 357  
 Hanksite. (Murdoch). . . . . 358  
 Hartley, J. . . . . 637  
 Harttite (=calcium svanbergite).  
 (Tavora). . . . . 927  
 Harvey, C. O. . . . . 636  
 Harwood, H. F. The greenockite  
 locality at Bishopton, Scotland. . . . . 630  
 Hatch, R. A. . . . . 312, 317  
 Heinrich, E. Wm. Mineralogy of  
 triplite. . . . . 256  
 ———. (Book reviews). . . . .  
 . . . . . 377, 378, 379, 633, 634, 791  
 Henderson, E. P. and Perry, S. H.  
 A restudy of the Social Circle,  
 Georgia, meteorite. . . . . 603



- . (Book review)..... 375
- Hendricks, S. B. (Book review)... 921
- Hessite, structural lattice of.**  
(Rowland and Berry)..... 471
- Hey, M. H. An Index of Mineral Species and Varieties Arranged Chemically. (Book review) ..... 634
- Hey, M. H..... 642
- Hietanen, A. Chloritoid from Rawlinsville, Lancaster County, Pennsylvania.**..... 859
- Higginsite. (Berry)..... 485
- High temperature stage for the polarizing microscope (Wood). 768
- High temperature thermal effects of clay and related materials.**  
(Bradley, Grim)..... 182
- High-temperature x-ray study of the polymorphism of  $MgSiO_3$ . (Foster)..... 315
- High-low inversion of quartz, geological significance of variations in. (Keith, Tuttle)..... 319
- Histrixite. (Ramdohr)..... 383
- Hogarth, D. D. Studies of radioactive compounds: II—Metazeunerite, uranophane, kasolite and cuprosklodowskite in Canada.**..... 411
- Holland, H. D., with Kerr, P. F. Differential thermal analyses of davidite.**..... 563
- Hollingsworth, S. E..... 382
- Hornblende rims on Adirondack garnet, origin of. (Levin)..... 319
- Hotz, P. E..... 317
- Hummerite and montroseite, two vanadium minerals from Montrose County, Colorado. (Weeks, Cisney, Sherwood)... 326
- Humphrey, R. A..... 317
- Hurlbut, C. S., Jr., and Wenden, H. E. Beryl at Mount Mica, Maine.**..... 751
- ..... 318
- Hutton, C. O. Allanite from Yosemite National Park, Tuolumne Co., California.**..... 233
- . Occurrence, analysis, and properties of huttonite..... 66
- Huttonite, a new monoclinic thorium silicate. (Pabst).**..... 60
- Huttonite, an account of its occurrence, analysis, and properties. (Hutton).**..... 66
- Hydration and base exchange properties of carnotite, tyuyamunite and related compounds. (Murata, Cisney, Stieff, Zworykin) 323
- Hydrobasaluminite. (Hollingsworth, Bannister)..... 382
- Hydrocerussite (Kingsbury, Hartley)..... 637
- Hydrous ferric oxides, differential thermal analysis of. (Kulp, Trites).**..... 23
- Ilsemaninite and jordisite. (Staples)**..... 609
- Immersion liquids of high refractive index. (Meyrowitz, Larsen)**..... 321, 746
- Index of mineral species and varieties arranged chemically. (Hey), (Book review)..... 634
- Industrial Diamond Review)..... 632
- Ingerson, E., and Morey, G. W. Double fluorides of zinc..... 778
- . (Book reviews)..... 517, 787, 791, 922
- Insley, H..... 318
- Interplanar spacings, direct determination of, from x-ray patterns recorded on charts. (Shurtz)..... 626
- Introduction to theoretical igneous petrology. (Wahlstrom). (Book review)..... 379
- Isomorphism and bond type. (Fyfe).**..... 538
- Jaffe, H. W. The role of yttrium and other minor elements in the garnet group.**..... 133
- Jarosite from the California Tertiary. (Briggs)..... 902
- Jasmund, K. Die Silicatischen Tonminerale. (Book review).. 924
- Jeffries, J. T..... 637
- Jordisite. (Staples).**..... 609

- Kasolite. (Hogarth)**..... 411
- Kawai, T.**..... 794
- Keith, M. L. with Yoder, H. S.**  
Complete substitution of aluminum for silicon: The system  $3\text{MnO} \cdot \text{Al}_2\text{O}_3 \cdot 3\text{SiO}_2 \cdot 3\text{Y}_2\text{O}_3 \cdot 5\text{Al}_2\text{O}_3$ ..... 328, 519
- ..... 319
- Kent, P., and Kerr, P. F., with Kulp, J. L.** Thermal study of the Ca-Mg-Fe carbonate minerals..... 643
- Kerr, P. F., and Kent, P., with Kulp, J. L.** Thermal study of the Ca-Mg-Fe carbonate minerals..... 643
- , and Holland, H. D. Differential thermal analyses of davidite..... 563
- Kingsbury, A. W. G.**..... 637
- Kobeite. (Takubo, Ukai, Minato)**..... 925
- Kokkoros, P.**..... 381
- Kraus, H.** (Book reviews)..... 168, 169
- Kruzhanovskite. (Ginsburg)**..... 382
- Ktenasite. (Kokkoros)**..... 381
- Kulp, J. L., Kent, P., and Kerr, P. F.** Thermal study of the Ca-Mg-Fe carbonate minerals... 643
- , and Trites, A. F. Differential thermal analysis of natural hydrous ferric oxides... 23
- LaPaz, L., with Beck, C. W.** The Nortonite fall and its mineralogy..... 45
- ..... 357
- Larsen, E. S., Jr., with Meyrowitz, R.** Immersion liquids of high refractive index..... 321, 746
- Layered ultramylonite from southeastern Connecticut, origin of. (Sclar)**..... 324
- Lecontite. (Winchell, Benoit)**..... 590
- Leitfaden für die exakte Edelsteinbestimmung. (Schlossmacher), (Book review)**..... 169
- Leitmeier, H.** Einführungen die Gesteinskunde. (Book review) 922
- Leücochalcite. (Berry)**..... 500
- Levin, S. B.**..... 319
- Lewis, D. R., with Rowland, R. A.**  
Furnace atmosphere control in differential thermal analysis..... 80, 324
- Linarite, unit cell of. (Berry)**..... 511
- Liquid immiscibility in the system  $\text{K}_2\text{O}-\text{FeO}-\text{Al}_2\text{O}_3-\text{SiO}_2$  at low temperature (Roedder)**.. 282
- Liroconite. (Berry)**..... 484
- Livingstonite, x-ray study of. (Gorman)**..... 480
- Lombaardite. (Nel, Strauss, Wickman)**..... 381
- Lord Hill pegmatite, geology and paragenesis of. (Woodard)**... 869
- Love, J. D.**..... 319
- Lukesh, J. S.** Crystal structure determination from rough intensity relations..... 687
- Luminescence activation of zeolite minerals by base exchange, preliminary observations on. (Claffy, Schulman)**..... 272, 312
- Magnetoplumbite, unit cell of. (Berry)**..... 512
- Magniophilite. (Beus)**..... 925
- Mangankoninckite. (Beus)**..... 926
- Marble, J. P.** Report of the Committee on the Measurement of Geologic Time, 1949-1950. (Book review)..... 633
- Marshall, C. E.** Colloidal Chemistry of the Silicate Minerals. (Book review)..... 921
- Mascagnite. (Winchell, Benoit)**... 590
- Mason, B.**..... 320
- Mathews, W. H.** A useful method for determining approximate composition of fine grained igneous rocks..... 92
- Matildite, aramayoite, miargyrite. (Graham)**..... 436
- McConnell, D.**..... 321
- Medmontite. (Chukhrov, Anosov)** 793
- Meixner, H.**..... 926
- Meta-zeunerite. (Hogarth)**..... 411
- Meteoritic Dust. (Buddhue), (Book review)**..... 633
- Meyrowitz, R., and Larsen, E. S., Jr.** Immersion liquids of high refractive index..... 321, 746

- Miargyrite. (Graham)**..... 436
- Mica and related fluosilicates, growth of crystals of. (Insley) 318
- Microseparation of minerals in heavy liquids. (Rodda)..... 625
- Mikami, H. M..... 321
- Milne, I. H. and Nuffield, E. W.**  
**Studies of radioactive compounds: I—Vandenbrandeite** 394  
**——. Studies of radioactive compounds: III—Uranouranic oxide ( $U_3O_8$ )**..... 415
- Milton, C., and Axelrod, J. M.**  
**Stylotypite, a discredited species**..... 696  
**——, Murata, K. J., Grimaldi, F. S., with Axelrod, J. M. The uranium minerals from the Hillside Mine, Yavapai County, Arizona**..... 1  
**——**..... 631
- Minato, T..... 925
- Mineral calorimetry, some aspects of. (Wittels)**..... 760
- Mineral Commodities of California, Bulletin 156. (Calif. State Div. of Mines), (Book review)..... 376
- Mineral formation in natural chemical systems under equilibrium and non-equilibrium conditions. (Tunell)**..... 171
- Mineral resources of the southeastern United States, Symposium on..... 517
- Mineralogical Society of America at Washington, D. C., Proceedings of the thirty-first annual meeting..... 304
- Mineralogical Society. (London)..... 357, 635, 783
- Minerals of the eastern Santa Monica Mountains, Los Angeles City. (Neuerburg) ... 156
- Minerals, new data..... 384
- Mink, J. F..... 310
- Monochrometer utilizing the rotary power of quartz. (Hurlbut) ... 318
- Montmorillonite, crystal chemistry of, II—Calculation of the structural formula. (McConnell)..... 321
- Montroseite. (Weeks, Cisney, Sherwood)..... 320
- Morey, G. W. with Ingerson, E. Double fluorides of zinc..... 778  
**——**..... 322
- Mrose, M. E..... 322
- Murata, K. J., Grimaldi, F. S. and Milton, C., with Axelrod, J. M. Uranium minerals from the Hillside Mine, Yavapai County, Arizona**..... 1  
**——**..... 323
- Murdoch, J. Notes on California minerals: neuvite=samarskite; trona and hanksite; gaylussite..... 358  
**——. Perovskite**..... 573  
**——**..... 323
- Nasonite and its relation to pyromorphite. (Fron del, Bauer)**... 534
- Nel, H. J..... 381
- Neuerburg, G. J. Minerals of the eastern Santa Monica Mountains, Los Angeles City..... 156
- New mineral names, ten years of. (Fleischer)..... 630
- New mineral names. . . 381, 638, 793, 925
- New mineral names. (Gagarin, Cummo)..... 638
- Nichols, J. B. (Book review)..... 376
- Nickel cabrerite. (Meixner)..... 926
- Nininger Collection of Meteorites. (Nininger, Nininger), (Book review)..... 375
- Nininger, H. H., and Nininger, A. D. The Nininger Collection of Meteorites. (Book review) . . 375
- Nogizawalite. (Kawai)..... 794
- Norrish, K..... 357, 793
- Nortonite fall and its mineralogy. (Beck and LaPaz)**..... 45
- Novacekite, studies of uranium minerals. (Fron del)**..... 680
- Novitzky, A. Diccionario Minero-Metalúrgico-Geológico-Mineralógico-Petrográfico, y de Petroléo. (Inglés-Español, Francés, Alemán, Ruso), Book review)..... 791
- Nuevite=samarskite; trona and



- hanksite; gaylussite, notes on California minerals. (Murdoch) 358
- Nuffield, E. W., with Milne, I. H. Studies of radioactive compounds: I—Vandenbrandeite 394
- Oke, W. C. An improved "diamond" mortar. . . . . 164
- Olivenite. (Berry). . . . . 484
- Oliver, T. A. Effect of uralitization upon the chemical composition of the Sudbury norite. . . . . 421
- O'Mara, J. H. Unit cell and space group of glaucocroite. . . . . 918
- Optic angle determination with the universal stage, precision and accuracy of. (Fairbairn, Podolsky) . . . . . 823
- Optical angle, computation of, from the three principal refractive indices (Wright). . . . . 543
- Optical Crystallography. (Wahlstrom), (Book review). . . . . 924
- Oxammite. (Winchell, Benoit). . . . 590
- Oxychildrenite. (Ginzburg, Voronkova) . . . . . 642
- Pabst, A. Huttonite, a new monoclinic thorium silicate. . . . . 60
- . X-ray examination of uranothorite . . . . . 323, 557
- Palache, C. Memorial of Martin A. Peacock. . . . . 385
- Paragenesis of sylvine, carnallite, polyhalite and kieserite in Eskdale borings Nos. 3, 4 and 6, North-east Yorkshire. (Armstrong, Dunham, Harvey, Sabine, Waters). . . . . 636
- Paratacamite. (Frondel). . . . . 384
- Patton, L. T. Igneous rocks of the Capitan Quadrangle, New Mexico. . . . . 713
- Peacock, Martin Alfred, memorial of. (Palache). . . . . 385
- Peacock, M. A., Rowland, J. F., and Berry, L. G., with Thompson, R. M. Empressite and "stuetzite". . . . . 458
- Perovskite. (Murdoch). . . . . 573
- Perrierite. (Bonatti, Gottardi). . . . 926
- Perry, S. H., with Henderson, E. P. A restudy of the Social Circle, Georgia, meteorite. . . . . 603
- Petrography as an aid in dating Tertiary volcanic rocks. (Love) 319
- Photographs of the atoms in the structures of minerals. (Buerger). . . . . 311
- Plagioclase twinning in metamorphic rocks. (Turner). . . 326, 581
- Plagioclase twins, petrological studies on. (Gorai). . . . . 884
- Podolsky, T., with Fairbairn, H. W. Notes on precision and accuracy of optic angle determination with the universal stage. . . . . 823
- Polished thin sections of mineral grains, preparation of. (Brisson). . . . . 731
- Prabhu, K. P. . . . . 324
- Precision of thin-section analysis by point counter, a test of. (Chayes, Fairbairn). . . . . 704
- Priderite, a new mineral from the leucite lamproites of the west Kimberley area, Western Australia. (Norrish). . . . . 357, 793
- Przybylska, M., and Shore, V. C., with Barnes, W. H. Further notes on the precision of the Buerger precision instrument. 430
- Pyrite group, some measurements on minerals of. (Gordon). . . . 918
- Quartz, high-low inversion, geological significance of. (Keith, Tuttle). . . . . 319
- Radioactive Compounds: I—Vandenbrandeite, studies of. (Milne, Nuffield). . . . . 394
- Radioactive Compounds: II—Meta-zeunerite, uranophane, kasolite and cuprosklodowskite in Canada, studies of. (Hogarth). . . . . 411
- Radioactive compounds: III—Urano-uranic oxide ( $U_3O_8$ ), studies of. (Milne). . . . . 415
- Ramdohr, P. . . . . 383

- Rankama, K., and Sahama, T. G. Geochemistry. (Book review). 378
- Red radioactive zones north of Goldfields, Saskatchewan, petrology of. (Conybeare, Campbell). 70
- Refractive index, alignment chart for the calculation of, from the deviation of light by a prism. (Winchell). 287
- Reichenbach and Brezina lamellae in meteoritic irons. (Spencer). 635
- Report of the Committee on the Measurement of Geologic Time, 1949-1950. (Marble), (Book review). 633
- Robertson, F. Sphalerite-dolomite orientation relations at the Renfrew zinc prospect, Ontario 116
- , with Graham, C. A new dumortierite locality from Montana. 916
- Robinson, E. T. 637
- Rodda, J. L. Microseparation of minerals in heavy liquids. 625
- Roebbling Medal of the Mineralogical Society of America, presentation to Norman L. Bowen. (Buddington). 291
- Roebbling Medal of the Mineralogical Society of America, acceptance of. (Bowen). 295
- Roedder, E. Low temperature liquid immiscibility in the system  $K_2O-FeO-Al_2O_3-SiO_2$ . 282
- Roman Book on Precious Stones. (Ball), (Book review). 168
- Ross, C. S. (Book review). 517, 921
- Rowe, R. B. and Weis, P. L., with Cameron, E. N. Fluid inclusions in beryl and quartz from pegmatites of the Middletown District, Connecticut. 906
- Rowland, J. F., Berry, L. G., and Peacock, M. A., with Thompson, R. M. Empressite and "stuetzite". 458
- , and Berry, L. G. The structural lattice of hessite. 471
- Rowland, R. A., and Lewis, D. R. Furnace atmosphere control in differential thermal analysis 80, 324
- Sabine, P. A. 636
- Sabugalite, an aluminum-autunite, Studies of uranium minerals (VIII). (Fron del). 671
- Sahama, T. G., with Rankama, K. Geochemistry. (Book review). 378
- Saléeite and novacekite, Studies of uranium minerals (IX). (Fron del). 680
- Samson, H. R. A note on the fluorescence of Wyoming bentonite. 160
- Santa Monica Mountains, minerals of. (Neuerburg). 155
- Sauconite and some zinc minerals of the same paragenetic association, thermal analysis and x-ray studies of. (Faust). 795
- Schairerite, unit cell of. (Wolfe, Caras). 912
- Schlossmacher, K. Leitfaden für die exakte Edelsteinbestimmung. (Book review). 169
- Scholzite. (Strunz). 382
- Schroëckingerite, analysis. 5
- Schulman, J. H., with Claffy, E. W. Preliminary observations on the luminescence activation of zeolite minerals by base exchange. 272, 312
- Sclar, C. B. 324
- Seager, A. F. 357, 636
- Sedimentary amphibolites in the Van Horn Mountains, Texas. (Flawn). 314
- Sedimentary inclusions in hypersthene-gabbro, Ardnamurchan, Argyllshire. (Wells). 635
- Segnit, E. R. 635
- Senftle, F. E. Apparatus for the separation of mineral grains. 910
- Separation of mineral grains, apparatus for. (Senftle). 910
- Serpentine minerals, antigorite and chrysotile, morphology and structure of. (Bates, Mink). 310

- Setting a given direction parallel to the axis of a goniometer head. (Fisher)..... 123
- Shape of granitic pegmatite intrusions, relation of type of country rock to. (Staatz, Trites)... 325
- Shearer, J..... 637
- Sherwood, A. M..... 326
- Shonkin Sag laccolith revisited. (Barksdale)..... 310
- Shore, V. C., and Barnes, W. H. The childrenite-eosphorite problem..... 509
- , and Przybylska, M., with Barnes, W. H. Further notes on the precision of the Buerger precession instrument..... 430
- Shrode, R. S..... 316
- Shurtz, R. F. Direct determination of interplanar spacing from x-ray patterns recorded on charts..... 626
- Silicate Melt Equilibria. (Eitel), (Book review)..... 785
- Silicatischen Tonminerale. (Jas-mund), (Book review)..... 924
- Slawson, C. B. (Book review)..... 924
- Social Circle, Georgia, meteorite, a restudy of. (Henderson, Perry)..... 603
- Solubility of quartz and some other substances in superheated steam at high pressures. (Morey)..... 322
- Sommerlatte, H., and Friedens-burg, F., Berg, G. Die metal-lischen Rohstoffe, Vol. 9, Blei und Zink. (Book review)..... 633
- Spencer, L. J..... 635
- Sphalerite-dolomite orientation relations at the Renfrew zinc prospect, Ontario. (Robertson)..... 116
- Staatz, M. H..... 325
- Staples, Lloyd W. Ilsemanite and jordisite..... 609
- Star sapphires and rubies, syn-thesis of. (Fron del)..... 316
- Stewart, D., Jr. On the mineralogy of Antarctica..... 362
- Stewart, F. H..... 636
- Stieff, L. R..... 323
- Stolzite (Kingsbury, Hartley)..... 637
- Strauss, C. A..... 381
- Structural transformations in am-phiboles at elevated tempera-tures. (Wittels)..... 851
- “Stuetzite” and empressite. (Thompson, Peacock, Row-land, Berry)..... 458
- Strunz, H..... 382
- Stylotypite, a discredited species. (Milton, Axelrod)..... 696
- Surface features of chert as studied by the electron microscope. (Folk, Weaver)..... 315
- Surface structure of crystals. (Sea-ger)..... 636
- Surface structure and crystal growth. (Weyl)..... 327
- Swartzite, optical, chemical and x-ray data..... 4
- Symposium on Mineral Resources of the Southeastern United States. (Book review)..... 517
- Synthetic aluminous and other pyroxenes, data on. (Segnit)..... 635
- Synthetic fluorine-amphiboles, iso-morphism of. (Comeforo, Hatch, Eitel)..... 312
- Takubo, J..... 925
- Tallingite. (Bannister, Hey, Clar-ingbull)..... 642
- Tavora, E..... 927
- Taylorite, mascagnite, aphthitalite, lecontite, and oxammite from guano. (Winchell, Benoit)..... 590
- Textural terms in petrography, notes on the nomenclature of. (Dolar-Mantuani)..... 624
- Thin-section thickness, determina-tion of, by the U-stage. (An-derson)..... 622
- Thompson, R. M., Peacock, M. A., Rowland, J. F., and Berry, L. G., Empressite and “stuetz-ite”..... 458
- , Mineral occurrences in Western Canada..... 504



- Thorite from California, a new occurrence and variety. (George)** 129  
**Thorotungstite (Beard)**.....641, 642  
**Triplite, mineralogy of. (Heinrich)** 256  
**Trites, A. F., and Kulp, J. L. Differential thermal analysis of natural hydrous ferric oxides.** 23  
**Trites, A. F. and Kuep, J. L.** 325  
**Trona and hanksite. (Murdoch)**.. 358  
**Tunell, G. Mineral formation in natural chemical systems under equilibrium and non-equilibrium conditions.**..... 171  
**Turneure, F. S. (Book review)**... 167  
**Turner, F. J. Observations on twinning of plagioclase in metamorphic rocks.**.....326, 581  
**Tuttle, O. P.**..... 319  
**Twinning in dehydration of brucite, development of. (Garrido)**... 773  
**Twinning of plagioclase in metamorphic rocks, observations on. (Turner)**.....326, 581  
  
**Ukai, Y.**..... 925  
**Uralitization of Sudbury norite, effect upon the chemical composition. (Oliver)**..... 421  
**Uranium minerals, studies of, VII: Zeunerite. (Fron del)**..... 249  
**Uranium minerals (VIII): Sabugalite, an aluminum-autunite. (Fron del)**..... 671  
**Uranium minerals (IX): Saléeite and novacekite. (Fron del)**.... 680  
**Uranium minerals from the Hillside Mine, Yavapai County, Arizona. (Axelrod, Grimaldi, Milton, Murata)**..... 1  
**Uranophane. (Hogarth)**..... 411  
**Uranospinite, synthetic sodium-, ammonium-, and hydrogen-. (Mrose)**..... 322  
**Uranothorite, x-ray examination of. (Pabst)**..... 323, 557  
**Urano-uranic oxide ( $U_3O_8$ ). (Milne)**..... 415  
**Uvarovite, new occurrence from Northern Karelia, Finland. (von Knorring)**..... 636  
  
**Vandenbrandeite. (Milne, Nuffield)** 394  
**Variations in chemical composition across igneous contacts. (Dennen)**..... 313  
**Veil formation in crystals, mechanism of. (Zerfoss)**..... 328  
**Vitaliano, C. J.**..... 320  
**Vivianite concretions in Aquia Formation (Middle Eocene), Anne Arundel County, Maryland. (Barwick)**..... 629  
**von Knorring, O.**..... 636  
**Voronkova, N. V.**..... 642  
  
**Wadeite, x-ray study of. (Shearer, Robinson, Jefferies)**..... 637  
**Waesche, H. H.**..... 326  
**Wahlstrom, E. Introduction to Theoretical Igneous Petrology. (Book review)**..... 379  
**——, Optical Crystallography. (Book review)**..... 924  
**Walker Mineralogical Club, Proceedings, 1950.**..... 515  
**Wasserstein, B. Precision lattice measurements of galena.**.... 102  
**Water soluble and other crystals at low temperatures, growth of, (Waesche)**..... 326  
**Waters, F. W.**..... 636  
**Weaver, C. E.**..... 315  
**Weeks, A. D.**..... 326  
**Weis, P. L., and Rowe, R. B., with Cameron, E. N. Fluid inclusions in beryl and quartz from pegmatites of the Middletown District, Connecticut.** 906  
**Wells, M. K.**..... 635  
**Wenden, H. E., with Hurlbut, C. S., Jr. Beryl at Mount Mica, Maine.**..... 751  
**Western Canada, mineral occurrences in. (Thompson)**..... 504  
**Weyl, W.**..... 327  
**Weymouth, J. H.**..... 637  
**Wickman, F. E.**..... 381  
**Wilcox formation of Arkansas, petrography of. (Allen)**... 310  
**Williamson, W. O.**..... 637  
**Wilson, A. J. C. X-ray optics. The**

- diffraction of  $x$ -rays by finite and imperfect crystals. (Book review)..... 167
- Winchell, H. Alignment chart for the calculation of refractive index from the deviation of light by a prism..... 287
- Winchell, H., and Benoit, R. J. Taylorite, mascagnite, aphthitalite, lecontite, and oxammite from guano..... 590
- Wittels, M. The differential thermal analyzer as a micro-calorimeter..... 615
- . Some aspects of mineral calorimetry..... 760
- . Structural transformations in amphiboles at elevated temperatures..... 851
- Wolfe, C. W., and Caras, A. Unit cell of schairerite..... 912
- Wood, E. A. High temperature stage for the polarizing microscope..... 768
- Woodard, H. H. The geology and paragenesis of the Lord Hill pegmatite..... 869
- Worden, C. O., and Zapffe, C., with Zapffe, C. A. Fractography as a mineralogical technique..... 202
- Wright, F. E. Computation of the optical angle from the three principal refractive indices... 543
- . Memorial of Clarence Norman Fenner..... 297
- . (Book review)..... 374
- Wyoming bentonite, notes on the fluorescence of. (Samson)..... 160
- Xanthophyllite. (Forman)..... 450
- “X-ray diffraction patterns of asbestos,” discussion of. (Comeforo, Eitel)..... 368
- X-ray identification and crystal structure of clay minerals. (Edited by Brindley), (Book review)..... 632, 637, 921
- X-ray optics. The diffraction of  $x$ -rays by finite and imperfect crystals. (Wilson), (Book review)..... 167
- Yagi, K..... 327
- Yoder, H. S., and Keith, M. L. Complete substitution of aluminum for silicon: The system  $3\text{MnO} \cdot \text{Al}_2\text{O}_3 \cdot 3\text{SiO}_2 - 3\text{Y}_2\text{O}_3 \cdot 5\text{Al}_2\text{O}_3$ ..... 328, 519
- Yttrium and other minor elements in the garnet group, role of. (Jaffe)..... 133
- Yttrotungstite (Beard)..... 641
- Zapffe, C. A., Worden, C. O., and Zapffe, C. Fractography as a mineralogical technique..... 202
- Zemann, J..... 383
- Zerfoss, S..... 328
- Zeunerite. Studies of uranium minerals (VII). (Fron del).... 249
- Zinc, double fluorides of. (Ingerson, Morey)..... 778
- Zworykin, E. V..... 323

